CONCLUSION

CHAPTER - 7

CONCLUSIONS

7.1 General

The primary data collected from the site provides a clear picture of the site conditions, and also gives us a good insight about the deficiencies and the scope for improvements. The primary data coupled with the good engineering expertise lead us in giving apt and economical recommendations for the improvements. A budget of Rs. 9,70,00,000/- (Rs. Nine Crore Seventy Lakhs Only) has been allocated for this project. Hence, the provisions of items made in the cost estimate are in consensus with the allocated budget. The improvement proposal includes the following:

7.1.1. Geometric Improvements:

- Improvements of existing carriageway
- Improvements to cross sectional elements
- Improvements to horizontal alignment
- Improvements to longitudinal profile

7.1.2. Strengthening of Existing Pavements:

- **Pavement Overlay design**
- Road Drainage
- Road Furniture and Appurtenances
- Pedestrian Facilities
- Aesthetics

The summary of improvement proposals along the project roads in Wards 9 Conforming to Design Standards with all the Relevant Details such as Length and Width of existing roads, Plans and Construction Costs has been prepared. The details of improvement proposals are discussed in subsequent sections.

7.2. Improvement proposal for Carriageway

Since the majority of the roads are Arterial and sub-arterial roads where the Traffic intensity is less than 10msa the Thickness of the Bituminous Concrete has been reduced. Table 7.1 shows the improvement proposals and pavement composition for the existing roads.

TABLE 7.1: IMPROVEMENT PROPOSAL AND PAVEMENT CONDITION DETAILS

Ward No.10		
Sl no.	**Name of the road**	**BC**
BEL Layout		
1	2nd Block 4th Main Road	40
2	1st Main Road	40
3	2nd Main Road	40
4	3rd Main Road	40
5	4th Main Road 1st Cross Road	40
6	4th Main Road 5th Cross Road	40
7	4th Main Road 2nd Cross Road	40
8	4th Main Road 4th Cross Road	40
Nanjappa Layout		
9	1st A Main Road	40
Chamundeshwari Layout		
10	venugopalswami temple 2nd Cross Road (unnamed)	40
11	subbanna Road 2nd Cross	40
12	2nd Cross Road	40
13	5th Cross Road	40

14	5th 'A Cross Road	40
15	venugopalswami temple Main Road	40
16	venugopalswami temple 1st Cross Road (unnamed)	40
17	unnamed Road (next to 1st Cross 2nd phase)	40
18	unnamed Road (next to 2nd Cross 4th phase)	40
19	unnamed Road (dead end curve Road)	40
20	2nd Cross 4th phase	40
C.Ramaiah Layout		
21	3'D Cross Road	40
22	3'C Cross Road	40
23	3'B Cross Road	40
24	3'A Cross Road	40
25	2'A Cross Road	40
Muneshwara Layout		
26	6th Cross Road	40
27	In between 5th & 6th Cross	40
28	2nd Cross Road	40
29	3rd Cross Road	40
30	5th Cross Road	40
Doddabommasandra		
31	2nd'B Cross Road	40
32	2nd'E Cross Road	40
33	1st Cross Road	40

34	7th Cross Road vemanna layout	40
35	2nd Cross Road	40

Ward No.11		
Sl no.	**Name of the road**	**BC**
Kuvempunagara 1st stage		
1	kamaraja road 8th cross upto dead end	40
2	opposite to 8th cross	40
3	opposite to 9th cross	40
4	12th cross upto the coconut tree (next to the 11th cross)	40
5	11th cross (down next to CC road) (continution of khaliamma temple)	40
Kuvempunagara 2nd stage		
6	11th cross upto the shop (2nd stage) (khaliamma temple)	40
7	Jalahalli east, right side vinayaka provision store (infront of sharadadevi chicken center) Govt school road	40
Balaji Layout		
8	3rd main road	40
Prakruthi Layout		
9	Main road and cross roads	40
10	1st Cross	40
11	2nd cross	40
12	3rd cross	40

Dhanlakshmi Layout		
13	Dhanlakshmi Layout main road ('L' shape)	40
14	1st cross (from dead end)	40
16	Cross road (shishu Patashala)	40
17	2nd cross (from dead end)	40
18	3rd cross (from dead end)	40
19	AVR Block 1st cross	40
Canara Bank Layout		
20	2nd main road	40
Singapura Paradise		
21	2nd main tower road (from singapura main road to dead end)	40
22	Opposite to Tower road	40
23	Cross Roads from End	40
25	4th cross road ward 11, (from singapura main road to dead road)	40
26	3rd main road (from singapura main road to dead road)	40
27	Cross Road 1	40
28	Cross Road 2	40
19	Cross Road 3	40
30	Cross Road 4	40
31	3rd main and 3rd cross road	40
32	Cross Road 5	40
33	Cross Road 6 (curve road)	40

34	Paradise main road (from chandragathi house #64 to dead end	40
35	From Abbigere main road to dead end (santhe road)	40
Sai Garden Layout		
36	Main road	40
37	1st cross	40
38	2nd cross	40
39	3rd cross	40
40	4th cross	40
Singapura Village		
41	Varadaraja swamy temple (from main road upto corner)	40
Hosabalve Nagar		
42	Singapura Road to dead end	40
43	srinikanth Main Road	40
44	Singapura Road to dead end	40
45	Singapura Road to dead end	40
Chandrappa Layout		
46	1st main road and all cross roads	40
47	3rd cross	40
48	A.Chandrappa road 1st cross (LHS)	40
49	A.Chandrappa road 1st cross (RHS)	40
50	A.Chandrappa road 2nd cross (LHS)	40

51	A.Chandrappa road 2nd cross (RHS)	40
52	A.Chandrappa road 3rd cross (RHS)	40
53	A.Chandrappa road 3rd cross (LHS)	40
54	A.Chandrappa road 4th cross	40
55	A.Chandrappa road 5th cross (LHS)	40
56	A.Chandrappa road 5th cross (RHS)	40
57	A.Chandrappa road 6th cross	40
58	1st cross	40
59	4th cross	40
60	5th cross	40
Teachers Layout		
61	1st cross ward no 11	40
Rajeshwari Layout		
62	Tank Bund road	40
Singapura Garden		
63	4th cross	40
Munikalappa Layout		
64	1st Main Road	40
65	3rd Cross 2nd phase	40
Sonnappa Layout		
66	4th cross	40
67	12'A main road (satya green appartment main road)	40
Sidhivinayaka Layout		
68	6th main road	40

69	4th main road (all cross roads)	40
70	4th main dead end road ('T' shape road)	40
71	Kodegahalli Layout	40
Kodegahalli Layout		
72	3rd main road to dead end	40
73	5th cross	40
74	2nd cross	40
75	4th cross	40
76	3rd cross	40
77	1st cross	40
78	opposite to 1st cross road	40
Defence layout		
79	3rd Road	40
BEL Layout		
80	5th Block venkateshwari temple Road (Arch)	40
81	3rd Block 12th Cross Road	40
82	3rd Block 9th Cross Road	40
Muneshwara Layout		
83	4th Cross Road	40
Nanjappa Layout		
84	Nanjappa layout 4th Cross	40
85	Blue moon ramanamma Garden 1st main	40
NTI Layout		
86	8th A Main Road	40

BEL Layout		
87	5th Block 4th Cross Road	40
88	2nd Block Road	40

7.3. Improvement Proposal for Side Drains

Adequate drainage is a primary requirement for maintaining the structural soundness and functional efficiency of a road in addition to preserving the valuable road assets created. Pavement structure including subgrade must be protected from any ingress of water, otherwise over a period of time it may weaken the sub grade by saturating it and cause distress in the pavement structure. Hence, rapid dispersal of water from pavement and sub grade is a basic consideration in road design. Also, quick drainage takes away the water from pavement's surface and reduces chances of skidding of vehicles.

The requirements of road drainage are essentially based on IRC: SP-42-" Guidelines on Road Drainage" and IRC:SP-50 -"Guidelines on Urban Drainage". Camber of 3.0 is provided for the carriageway. For longitudinal drains, a minimum longitudinal gradient of 0.3 percent shall be ensured for satisfactory drainage.

7.4. Improvements Related to Utility, Road Furniture and Appurtenances

Utility and Importance of the Road are greatly enhanced by installing Road Furniture and Appurtenances at appropriate locations along the Project Road, which ensures Improved Road Safety. Planning and Design of Road Furniture and Appurtenances are as per the Guidelines stipulated in IRC. Detailing of each of these Components has been done so that to integrate the same with the Road Improvement Scheme.

COST

ESTIMATES

CHAPTER - 8

COST ESTIMATES

8.1. Detailed Cost Estimate

Detailed cost estimate for Various works listed in Package No. 4 has been worked out based on detailed engineering design.

8.2. General

Cost Estimate is an important part of the DPR as it provides vital input to financial evaluation of the project. The cost estimates have been prepared for strengthening of the existing road, repairs and improvements to longitudinal drains, road furniture and appurtenances.

8.3. Basic rates

As part of Detailed Project Report, Rate Analysis of each of the item has been prepared by adopting PW, P & IWTD SR 2016-17, Bangalore Circle. The rates as given in PW, P & IWTD SR are to be enhanced by 6% for additional weight age for the works to be executed under extra ordinary conditions for Bangalore Metropolitan Limits. Items not covered in NHSR / PW, P & IWTD SR have been based on market rates.

8.4. Utility Relocation

Provision of 1.5% of Construction cost is made in the cost estimated for raising and or shifting electric supply lines, telephone lines, OFC lines and other utilities.

8.5. Project Management and Quality Control

Provision of 2.0% of Construction Cost has been made towards Cost of DPR Preparation, PMC and Proof Checking.

8.6. Project Cost

The total project cost for ***Preparation of DPR for Package No. 04 (Package consists of 28 works in ward no 10 and ward no 11)*** is 970 Lakhs and the Detailed Cost Estimate is enclosed.

ABSTRACT OF ESTIMATE

ABSTRACT
OF
WARD NO. 10

BRUHAT BANGALORE MAHANAGARA PALIKE

PREPARATION OF DPR FOR PACKAGE NO. 04

(PACKAGE CONSISTS OF 28 WORKS IN WARD NO 10 AND WARD NO 11)

Sl No.	List of Roads
1	**Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.**
2	**Improvements and Asphalting toRoads and Drains at Nanjappa Layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.**
3	**Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.**
4	**Improvements and Asphalting to Roads and Dains at Muneshwara Layout 1st to 8th Cross in Ward No. 10 Vidyaranyapura Sub Division.**
5	**Improvements and Asphalting to Roads and Drain at Venugopalswamy Temple Road and Ganjanna Yuvakara Sanga Roads in Ward No. 10 Vidyaranyapura Sub Division.**
6	**Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.**
7	**Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.**
8	**Improvements and Asphalting to Roads and Drains at Chamundeshwari layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.**

ABSTRACT ESTIMATE

Sl. No.	Description of Work	Unit	Quantity	Rate in Rs.	Amount in Rs.
1	**Earthwork in surface excavation in ordinary soil for leveling and lowering the ground manually (other than foundation of buildings, culverts, roads drains and trenches of pipe line and cables) and removing the excavated stuff to a distance not exceeding 50m and lift up lift 1.5, excavated surface leveled and neatly dressed disposed earth to be leveled after breaking of clods and neatly dressed as per specifications and as per the directions of the**	**Cum**	**1906.70**	**166.42**	**317312.3483**
a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		652.86		
b	Improvements and Asphalting toRoads and Drains at Nanjappa Layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		324.14		
c	Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.		98.57		
d	Improvements and Asphalting to Roads and Dains at Muneshwara Layout 1st to 8th Cross in Ward No. 10 Vidyaranyapura Sub Division.		156.01		
e	Improvements and Asphalting to Roads and Drain at Venugopalswamy Temple Road and Ganjanna Yuvakara Sanga Roads in Ward No. 10 Vidyaranyapura Sub Division.		20.28		
f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		442.18		
g	Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.		166.13		

h	Improvements and Asphalting to Roads and Drains at Chamundeshwari layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		46.54		
2	**Removing B.S.slab of Drain and stacking as per the directions of the Engineer-in-charge of the work .**	Sqm	**355.12**	**65.72**	**23338.42068**
a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		155.63		
b	Improvements and Asphalting toRoads and Drains at Nanjappa Layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		40.52		
c	Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.		24.73		
d	Improvements and Asphalting to Roads and Dains at Muneshwara Layout 1st to 8th Cross in Ward No. 10 Vidyaranyapura Sub Division.		19.50		
e	Improvements and Asphalting to Roads and Drain at Venugopalswamy Temple Road and Ganjanna Yuvakara Sanga Roads in Ward No. 10 Vidyaranyapura Sub Division.		2.54		
f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		85.62		
g	Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.		20.77		
h	Improvements and Asphalting to Roads and Drains at Chamundeshwari layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		5.82		
3	**Removing and refixing stone slabs of drains and pointing in CM (1:3) as per the directions of the Engineer-in-charge of the work .**	**Sqm**	**1020.80**	**80.56**	**82235.48688**
a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		263.32		
b	Improvements and Asphalting toRoads and Drains at Nanjappa Layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		243.11		
c	Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.		36.70		
d	Improvements and Asphalting to Roads and Dains at Muneshwara Layout 1st to 8th Cross in Ward No. 10 Vidyaranyapura Sub Division.		117.01		
e	Improvements and Asphalting to Roads and Drain at Venugopalswamy Temple Road and Ganjanna Yuvakara Sanga Roads in Ward No. 10 Vidyaranyapura Sub Division.		15.21		
f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		185.96		
g	Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.		124.60		

h	Improvements and Asphalting to Roads and Drains at Chamundeshwari layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		34.90		
4	**Providing granite slabs of selected quality roughly dressed havinf a size of 7.5 cms thick and fixed in cement mortar (1:6) including fixing curing ete., complete as per the directions of the Engineer-in-charge of the work .**	Sqm	**170.13**	**665.68**	**113254.1354**
a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		43.89		
b	Improvements and Asphalting toRoads and Drains at Nanjappa Layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		40.52		
c	Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.		6.12		
d	Improvements and Asphalting to Roads and Dains at Muneshwara Layout 1st to 8th Cross in Ward No. 10 Vidyaranyapura Sub Division.		19.50		
e	Improvements and Asphalting to Roads and Drain at Venugopalswamy Temple Road and Ganjanna Yuvakara Sanga Roads in Ward No. 10 Vidyaranyapura Sub Division.		2.54		
f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		30.99		
g	Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.		20.77		
h	Improvements and Asphalting to Roads and Drains at Chamundeshwari layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		5.82		
5	**Providing granite slabs of selected quality roughly dressed havinf a size of 10 cms thick and fixed in cement mortar (1:6) including fixing curing ete., complete as per the directions of the Engineer-in-charge of the work .(Road)**	**Sqm**	**184.99**	**825.74**	**152750.3396**
a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		111.74		
c	Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.		18.61		
f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		54.63		
6	**Earthwork excavation by manual means in ordinary soil involving an average horizontal throw upto 2meters and an average lift upto 1.5 m, excavated surface leveled and sides neatly dressed, the disposed earth to be levelled neatly after breaking of clods complete as per specifications and as per the directions of the Engineer-in-charge of the work .**	**Cum**	**2643.76**	**86.92**	**229795.5453**

a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		1942.41		
f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		513.88		
g	Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.		187.47		
7	**Lead for disposal of earth shall be payable at Carriage rates (Lead & Lift) by mechanical means including loading and unloading up to 15kms as per the directions of the Engineer-in-charge of the work .**	**Cum**	**5555.09**	**122.96**	**683053.4299**
a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		2595.27		
b	Improvements and Asphalting toRoads and Drains at Nanjappa Layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		450.43		
c	Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.		356.32		
d	Improvements and Asphalting to Roads and Dains at Muneshwara Layout 1st to 8th Cross in Ward No. 10 Vidyaranyapura Sub Division.		401.61		
e	Improvements and Asphalting to Roads and Drain at Venugopalswamy Temple Road and Ganjanna Yuvakara Sanga Roads in Ward No. 10 Vidyaranyapura Sub Division.		229.32		
f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		956.06		
g	Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.		353.60		
h	Improvements and Asphalting to Roads and Drains at Chamundeshwari layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		212.49		
8	**Providing,laying, spreading and compacting crushed stone aggregates of granite/trap/ basalt to wet mix macadam specification including pre mixing the Material with water at OMC in mechanical mix plant carriage of mixed material by tipper to site, laying in uniform layers with paver in sub-base/ base course on well prepared surface and compacting with vibratory roller to achieve the desired density. complete as per specifications and as per the directions of the Engineer-in-charge of the work .**	**Cum**	**2643.76**	**1768.08**	**4674377.678**
a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		1942.41		
f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		513.88		

g	Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.		187.47		
9	**Cleaning the existing WBM Road surface including removing of binding materials and other foreign matter with wire brushes and small picks sweeping with brooms or soft brushes and finally dusting with old gunny bags and bar or compressed air to receive bituminous treatment including cost of all materials, labhour, HOM of machineries complet as per specifications and as per the directions of the Engineer-in-charge of the work .**	**Sqm**	**11494.61**	**13.78**	**158395.6569**
a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		8445.26		
f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		2234.25		
g	Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.		815.10		
9	**Providing and applying primer coat with SS bitumen emulsion on prepared surface of granular Base such as WBM WMM including clearing of road surface and spraying primer at the rate of 0.60 kglsqm using mechanical means complete as per specifications and as per the directions of the Engineer-in-charge of the work .**	**Sqm**	**11494.61**	**27.56**	**316791.3138**
a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		8445.26		
f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		2234.25		
g	Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.		815.10		
10	**Providing and laying dense graded bituminous macadam using crushed aggregates of specified grading, premixed with VG30 grade bituminous binder and, transporting the hot mix to work site, laying to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH table 500-10 complete in all respects complete as per specifications.. MORTH Specification No. 507 - using 40/60 TPH capacity H.M.P. with Mechanical paver Gr-II (50 mm to 75 mm) with 4.5 % VG-30 Bitumen as per the directions of the Engineer-in-charge of the work .**	**Cum**	**603.47**	**7120.02**	**4296695.418**
a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		443.38		

f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		117.30		
g	Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.		42.79		
11	**Cleaning the existing black topped surface with brooms,soft brushes and finally dusting with old gunny bags and/or compressed air to receive bituminous treatment including cost of all materials,labhour, HOM of machineries complete as per specifications and as per the directions of the Engineer-in-charge of the work .**	**Sqm**	**16641.62**	**3.18**	**52920.3357**
a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		7654.90		
b	Improvements and Asphalting toRoads and Drains at Nanjappa Layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		2035.80		
c	Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.		913.73		
f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		4344.41		
g	Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.		1692.78		
12	**Providing and applying tack coat using 80/100 grade bitumen (VG10) on prepared black topped surfaces at 2.5 Kg per 10 sqm, heating bitumen in boiler fitted with spray set (excluding cleaning of road surface) including cost of all materials, labour, HOM of machineries complete as per specifications and as per the directions of the Engineer-in-charge of the work .**	**Sqm**	**16641.62**	**12.72**	**211681.3428**
a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		7654.90		
b	Improvements and Asphalting toRoads and Drains at Nanjappa Layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		2035.80		
c	Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.		913.73		
f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		4344.41		
g	Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.		1692.78		

13	**Providing and laying bituminous concrete 30-40 mm compacted thickness with VG30 Bitumen grade using 40-60 HMP using crushed aggregates of grading II, premixed with bituminous binder at 5.4% of mix and filler, transporting the hot mix to work site, laying with a mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction complete in all respects as per specifications and as per the directions of the Engineer-in-charge of the work .**	**Cum**	**732.23**	**8118.54**	**5944647.15**
a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		336.82		
b	Improvements and Asphalting toRoads and Drains at Nanjappa Layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		89.58		
c	Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.		40.20		
f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		191.15		
g	Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.		74.48		
14	**Providing Plastic to Bituminous concrete @ 8%**	**Kg**	**6853.68**	**28.62**	**196152.3995**
a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		3152.59		
b	Improvements and Asphalting toRoads and Drains at Nanjappa Layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		838.42		
c	Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.		376.31		
f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		1789.20		
g	Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.		697.15		
15	**Road Marking with Hot Applied Thermoplastic Compound with Reflectrising Glass Beads on Bituminous Surface:- Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads at 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35. The finished surface to be level, uniform and free from streaks and holes complete as per specifications and as per the directions of the Engineer-in-charge of the work .**	**Sqm**	**597.73**	**542.72**	**324400.0256**
a	Improvements and Asphalting to Roads and Drains at BEL 2nd Block and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		257.16		

b	Improvements and Asphalting toRoads and Drains at Nanjappa Layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		78.30		
c	Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.		41.07		
f	Improvements and Asphalting to Roads and Drains at Vemanna layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		158.34		
g	Improvements and Asphalting from Peta Siddappa Circle to Aproova Apartment Road in Ward No. 10 Vidyaranyapura Sub Division.		62.86		
16	**Dismantling of cement concrete pavement by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials stacking serviceable and unserviceable materials seperately complete as per specification and as per the directions of the Engineer-in-charge of the work .**	**Cum**	**1004.63**	**827.86**	**831694.068**
b	Improvements and Asphalting toRoads and Drains at Nanjappa Layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		126.29		
c	Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.		257.75		
d	Improvements and Asphalting to Roads and Dains at Muneshwara Layout 1st to 8th Cross in Ward No. 10 Vidyaranyapura Sub Division.		245.60		
e	Improvements and Asphalting to Roads and Drain at Venugopalswamy Temple Road and Ganjanna Yuvakara Sanga Roads in Ward No. 10 Vidyaranyapura Sub Division.		209.04		
h	Improvements and Asphalting to Roads and Drains at Chamundeshwari layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		165.95		
17	**Construction of dry lean cement concrete mix CC1:5:10 with OPC cement @160Kgs, with 25mm and down size graded granite metal coarse aggregate at 0.86cum and fine aggregates @ 0.58cum Sub- base over a prepared sub-grade with (coarse and fine aggregate conforming to IS: 383) aggregate cement ratio not to exceed 15:1. Aggregate gradation after blending to be as per Table 600-1, cement content not to be less than 160 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing complete as per specifications and as per the directions of the Engineer-in-charge of the work .**	**Cum**	**1004.90**	**3986.66**	**4006199.817**

b	Improvements and Asphalting toRoads and Drains at Nanjappa Layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		126.29		
c	Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.		257.75		
d	Improvements and Asphalting to Roads and Dains at Muneshwara Layout 1st to 8th Cross in Ward No. 10 Vidyaranyapura Sub Division.		245.87		
e	Improvements and Asphalting to Roads and Drain at Venugopalswamy Temple Road and Ganjanna Yuvakara Sanga Roads in Ward No. 10 Vidyaranyapura Sub Division.		209.04		
h	Improvements and Asphalting to Roads and Drains at Chamundeshwari layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		165.95		
18	**Cement concrete pavement.Construction of un-reinforced plain cement concrete pavement, thickness as per design, over a prepared sub base with OPC cement or any other type as per clause 1051.2.2 design mix M20/M30 , with 25mm and down size graded granite metal coarse aggregates and fine aggregtes , with superplastisiser @3lts confirming to IS9103-1999 Reaffirmed-2008 , mixed in a concrete mixer of not less than 0.6 cum capacity and appropriate weigh batcher as per approved mix design, laid in approved fixed side form work (steel channel, laying and fixing of 125 micron thick polythene film, wedges, steel plates including levelling the form work as per drawing). Spreading the concrete with shovels, rackers compacted using needle, screed and plate vibrator and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints including groove cutting charges, joint filler, separation membrane, selant primer, joint sealant, admixtures as approved, curing compound, finishing to lines and grades as per drawing complete as per specifications and as per the directions of the Engineer-in-charge of the work .**	**Cum**	**1055.15**	**6217.96**	**6560857.892**
b	Improvements and Asphalting toRoads and Drains at Nanjappa Layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		132.60		
c	Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.		270.64		
d	Improvements and Asphalting to Roads and Dains at Muneshwara Layout 1st to 8th Cross in Ward No. 10 Vidyaranyapura Sub Division.		258.17		
e	Improvements and Asphalting to Roads and Drain at Venugopalswamy Temple Road and Ganjanna Yuvakara Sanga Roads in Ward No. 10 Vidyaranyapura Sub Division.		219.49		
h	Improvements and Asphalting to Roads and Drains at Chamundeshwari layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		174.25		

19	**Road Marking with Hot Applied Thermoplastic Compound with Reflectrising Glass Beads on Conrete Surface:- Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads at 250 gms and 2Ltr of Primer per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35. The finished surface to be level, uniform and free from streaks and holes complete as per specifications and as per the directions of the Engineer-in-charge of the work .**	**Sqm**	**288.57**	**685.82**	**197904.3341**
b	Improvements and Asphalting toRoads and Drains at Nanjappa Layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		38.70		
c	Improvements and Asphalting to Roads and Drains at C. Ramaiah Layout 1st to 7th Cross Roads in Ward No. 10 Vidyaranyapura Sub Division.		64.77		
d	Improvements and Asphalting to Roads and Dains at Muneshwara Layout 1st to 8th Cross in Ward No. 10 Vidyaranyapura Sub Division.		72.62		
e	Improvements and Asphalting to Roads and Drain at Venugopalswamy Temple Road and Ganjanna Yuvakara Sanga Roads in Ward No. 10 Vidyaranyapura Sub Division.		61.02		
h	Improvements and Asphalting to Roads and Drains at Chamundeshwari layout and Surrounding areas in Ward No. 10 Vidyaranyapura Sub Division.		51.46		
				Sub Total	**29374457.14**
	Preperation of DPR And Project management Consultancy Charges(2% of estimated cost)				600000
				Miscellenious and rounding	25542
				TOTAL AMOUNT	**30000000**
				RUPEES THREE CRORE ONLY	

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97